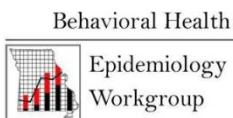# Confidence Intervals: A Quick Overview

For more information please contact the BHEW at 314-516-8412 or susan.depue@ mimh.edu

Behavioral Health
Epidemiology
Workgroup

One of the recent BHEW briefs contained a graph with something you may not have seen before – thin lines that look like an "I" near the top of each bar. These bars indicate the *confidence interval* (CI).

Statistics usually contain some uncertainty. We typically cannot survey an entire *population* so instead we obtain a *sample* and use that to estimate the population number. The ***95% confidence intervals*** shown below give us a little more information; they tell us that we can be 95% confident that the true population number falls within the range of those lines.
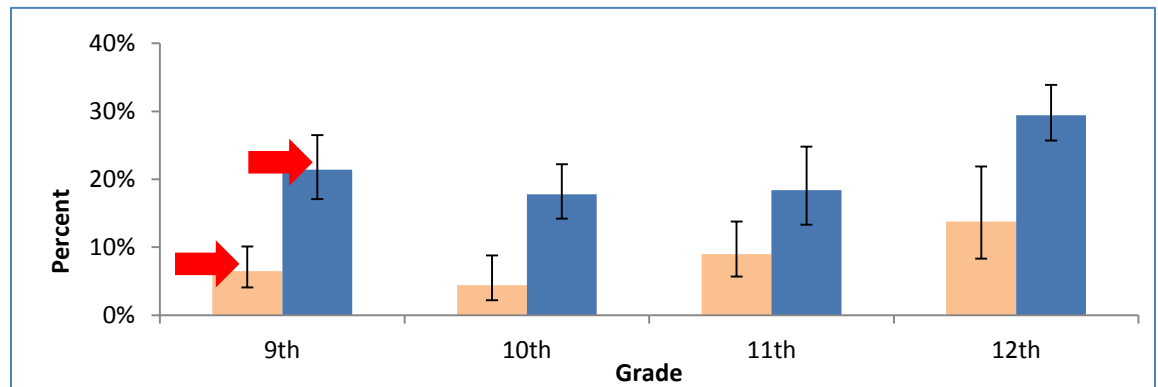
Depending on how much variability there is within the sample and the size of the sample, CI ranges can be smaller or larger. The height of the bar indicates the range size. Smaller bars means that our sample estimates are more precise.

You can use the overlap in confidence intervals as a quick way to check population differences. If the intervals do not overlap then you can be at least 95% confident there is a real difference in the population (for 95% CIs – we can calculate CIs for other confidence levels also).

- For example, if you look at 12th grade above, the CIs do not overlap each other. That means we can be 95% confident that there is a difference between the groups for the 12th grade population.
- On the other hand, in 11th grade, the bars are pretty far apart but you can see that the CIs overlap. This means that if the true population number was towards the very top of the range for the orange bar and the very bottom of the range for the blue bar, they could actually be the same. So, we can't be as confident that these numbers are different in the population as a whole.
- The more overlap of the CI, the less sure you can be that there is a significant difference between groups at the population level.

Not all data are collected in such a way to allow us to calculate confidence intervals. When they are available though, they can provide some helpful additional information!

For more information: http://www.census.gov/did/www/saipe/methods/statecounty/ci.html and http://www.measuringusability.com/blog/ci-10things.php provide good overviews on CIs.